Adjustments for Population Size

Populations of listed Chinook salmon and steelhead within the Interior Columbia River vary considerably in terms of the total area available to support spawning and rearing. The ICTRT developed a method for adapting viability curves to reflect estimates of the historical amount of potentially accessible spawning and rearing habitat available to a specific population. A more detailed description of the approach is provided in Attachment B.

In summary, a measure of spawning/rearing area used to index the population spawning/rearing areas is generated using a simple model of historical intrinsic potential. That model is driven by estimates of stream width, gradient, and valley width derived from a GIS-based analysis of the tributary habitat associated with each population. Each accessible 200-m reach within the tributary habitat associated with a specific population is assigned an intrinsic productivity rating based on the particular combination of physical habitat parameters listed above. Four categories were used: high, moderate, low, and not rated or zero potential. For application to yearling type chinook, sufficient information was available to add a negligible category. A weighted estimate of the total amount of rated habitat historically available to each population was constructed by summing the habitat by rating category, multiplying each sum by a relative weighting factor (1 = high, .5 = moderate, and .25 = low), and totaling the weighted sums. For this calculation, reaches rated as negligible were assigned a relative weight of 0.

Table 1. Minimum abundance thresholds by species and historical population size (spawning area) for Interior Columbia Basin stream type chinook and steelhead populations (Table 3). Median weighted area and corresponding spawners per km (calculated as ratio with corresponding threshold) provided for populations in each size category (see attachment B).

Population Size Category	**Stream Type Chinook** (Upper Columbia Spr, Snake Spr/Sum ESUs)			**Steelhead** (Upper Columbia, Middle Columbia & Snake River ESUs)		
	Threshold	**Median Weighted Area (m X 10,000)**	**Spawners per KM (weighted)**	**Threshold**	**Median Weighted Area (m X 10,000)**	**Spawners per KM (weighted)**
Basic	***500***	20	25.0	***500***	63	4.9
Intermediate	***750***	42	18.0	***1,000***	302	3.3
Large	***1,000***	77	13.0	***1,500***	627	2.4
Very Large	***2,000***	156	12.8	***2,250***	983	2.3